MOTHER INDIA

MONTHLY REVIEW OF CULTURE

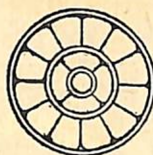


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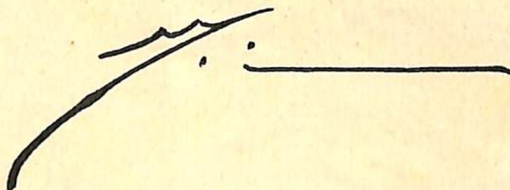
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SEPTEMBER 1957

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Lord, Thou hast willed, and I execute:
A new light breaks upon the earth,
A new world is born.
The things that were promised are fulfilled.



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MONTHLY REVIEW OF CULTURE

Vol. IX **No. 8**

"Great is Truth and it shall prevail"

CONTENTS

THE MOTHER'S TALKS

(*To the Children of the Ashram*)

(1)

How to get out of the sex consciousness in life ? When I am speaking, for example, with a person, do I not see the difference whether the person is a man or a woman ?

It is a pity you make the difference, a great pity for yourself and for the person concerned. It is just the contrary of what should be. When you are in contact with someone, when you speak with someone, it is precisely to that which is beyond all animality to which you should speak. It is the soul to which you should speak, never the body. Even much more is required of you, because you are required to address the Divine, not even the soul, the One Divine in all beings and to be conscious of that.

One can live twenty-four hours out of twenty-four without having any thought of this difference. It is really a "hypnotisation" that keeps you thinking of it.

26-6-1957

(2)

We said on the last occasion that we would prepare ourselves methodically for the Sadhana. There is a point on which I have already insisted a great deal, but unfortunately it has not had much effect on you. And I thought it would be better to begin with that to prepare you for future Sadhana.

So our meditation this evening will be on the evils of incontinence of speech. I have told you very often that whatever word you utter uselessly is dangerous chattering. But that is the extreme. There are things that are told, retold, repeated by all people who have endeavoured to perfect humanity, although without much result. But what I am referring to is malicious talking, slander, the love of speaking ill of others.

When you indulge in this kind of incontinence you besmirch your consciousness and if, to that incontinence, you add the habit of vulgar quarrels

with vulgar words, that amounts to suicide, the spiritual suicide of oneself.

9-8-1957

(3)

This evening, instead of questions and answers, I should like that we have a meditation on the memory of Sri Aurobindo, on the way of keeping that memory alive in us and on the gratitude we owe to him for all that he has done and what he is still doing in his consciousness always luminous, living and active for the sake of the great Realisation which he came not merely to announce to the earth but to achieve and which he continues to achieve.

Tomorrow is the anniversary of his birth, an eternal birth in the history of the universe.

14-8-1957

THE MOTHER ANSWERS QUESTIONS*

You spoke of Sri Aurobindo's birth as "eternal" in the history of the universe. What exactly was meant by "eternal" ?

The sentence can be understood in four different ways on four ascending planes of consciousness :

(1) Physically, the consequences of the birth will be of eternal importance in the world.

(2) Mentally, it is a birth that will be eternally remembered in the universal history.

(3) Psychically, a birth that recurs for ever from age to age upon earth.

(4) Spiritually, the birth of the Eternal upon earth.

* *

When you give us a subject for meditation, what should we do about it ? Keep thinking of it ? And when no subject is given, is it enough to concentrate on your Presence in the heart-centre ? Should we avoid a formulated prayer ?

(1) Keep your thought focussed upon it in a concentrated way.

(2) Yes, concentration on the Presence is enough.

* *

Kindly suggest some simple way by which one can slowly diminish one's abject dependence on ordinary material food and open oneself more and more to the universal vital energy.

There is no easy way to get over physical animality and vital greed. It is only an obstinate perseverance that can succeed.

* *

One often comes across the precept : "Love your enemy and smile at him." A hypocritical or diplomatic smile may be easy to manage, but a genuine smile is impossible to extend to those who have been repeatedly unfair in their dealings. We lose our trust, cease to expect anything good; an attitude of utter coldness and indifference is the natural one. How are we to get over it ?

You can smile genuinely at an enemy if you are above all insult and offence. This is the primary condition for the yogic attitude.

* Our readers are invited to send us questions on sadhana or on spiritual matters in general. (Editor)

PRAISE AND BLAME

(*Two Unpublished Letters of Sri Aurobindo*)

If the praise and blame of ignorant people is to be our standard, then we may say good-bye to the spiritual cause. If the Mother and I had cared for praise or blame we would have been crushed long ago. It is only recently that the Ashram has got "prestige"—before it was the target for an almost universal criticism, not to speak of the filthiest attacks.

30-6-1938

*　　　*

What you are looking at is the praise and blame of people, not at any "it". One has to look at "it" not from the point of view of whether it is praised or blamed by the public, but from its inherent relation to the spiritual life.

30-6-1938

(*From Nirodbaran's Correspondence*)

SOME NOTES ON SRI AUROBINDO'S POEMS

MOST of Sri Aurobindo's Sonnets were written in the late thirties though a few were touched up afterwards. Except for *Nirvana, The Other Earths* and *Transformation,* which are slightly earlier pieces, they were published after the poet had passed away. All of them are spiritual autobiography, but about the subject of three of them (*Adwaita, The Stone Goddess, The Godhead*) we have in his letters a passing statement, while of the realisation behind a fourth (*Nirvana*) he has given several descriptions. In a note dictated regarding his early spiritual experiences we read :

"Before he met Lele, Sri Aurobindo had some spiritual experiences, but that was before he knew anything about Yoga or even what Yoga was,—*e.g.*, a vast calm which descended upon him at the moment when he stepped first on Indian soil after his long absence, in fact with his first step on the Apollo Bunder in Bombay (this calm surrounded him and remained for long months afterwards); the realisation of the vacant Infinite while walking on the ridge of the Takhti-Suleman (Seat of Solomon) in Kashmir; the living presence of Kali in a shrine on the banks of the Narmada; the vision of the Godhead surging up from within when in danger of a carriage accident in Baroda in the first year of his stay..."

About the experience of Nirvana we may quote a passage from a note dictated for Aldous Huxley apropos a comment by the latter on a short excerpt from Sri Aurobindo made by him in his book, *The Perennial Philosophy* :

"...After three years of spiritual effort with only minor results he was shown by a Yogi the way to silence his mind. This he succeeded in doing entirely in two or three days by following the method shown. There was an entire silence of thought and feeling and all the ordinary movements of consciousness except the perception and recognition of things around without any accompanying concept or other reaction. The sense of ego disappeared and the movements of the ordinary life as well as speech and action were carried on by some habitual activity of Prakriti alone which was not felt as belonging to oneself. But the perception which remained saw all things as utterly unreal; this sense of unreality was overwhelming and universal. Only some undefinable Reality was perceived as true which was beyond space and time and unconnected with any cosmic activity, but yet was met wherever one turned. This condition

remained unimpaired for several months and even when the sense of unreality disappeared and there was a return to participation in the world-consciousness, the inner peace and freedom which resulted from this realisation remained permanently behind all surface movements and the essence of the realisation itself was not lost. At the same time an experience intervened: something else than himself took up his dynamic activity and spoke and acted through him but without any personal thought or initiative. What this was remained unknown until Sri Aurobindo came to realise the dynamic side of the Brahman, the Ishwara and felt himself moved by that in all his sadhana and action..."

To many lines in the Sonnets one can find parallels in *Savitri*, though, of course, not always with the same nuance and intent. Perhaps the most easily paralleled are some lines in *The Indwelling Universe* which begins,

> I contain the whole world in my soul's embrace:
> In me Arcturus and Belphegor burn...

Book VII, Canto 6, of *Savitri* has:

> His soul must be wider than the universe
> And feel eternity as its very stuff,
> Rejecting the moment's personality,
> Know itself older than the birth of Time,
> Creation an incident in its consciousness,
> Arcturus and Belphegor grains of fire
> Circling in a corner of its boundless self.

Unlike the name "Arcturus", which is well-known for one of the brightest stars in the northern heavens and which has found its way not unoften into literature, "Belphegor" which Sri Aurobindo has brought in with powerful effect has practically no place in popular astronomy and has figured rarely in past literary usage.

However, it has become famous, though not in an astronomical context, in contemporary France because of Julien Benda's book *Belphégor* where, turning its etymological significance (Baal-Peor, Semitic deity of licentiousness) to critical purposes, he has given a new adjective to the French language, *Belphégorien*, to designate certain strains of degeneracy and effeminacy in the intellectual and social life of his country.

The closing couplets of the two sonnets *The Guest* and *The Inner Sovereign*,

> He hears the blows that shatter Nature's house;
> Calm sits he, formidable, luminous,

and

> Nature in me one day like Him shall sit
> Victorious, calm, immortal, infinite,

summarise very finely and, because of some repeated expressions, very pointedly the double movement of the Aurobindonian Yoga, the discovery of the "deep deathless being" and then the extension of the inner immortality to the outer being that has so long been accepted as a thrall to limitation and imperfection, mutability and death.

The titles of the two poems are very significant. The one indicates that the Divine is a grand sojourner, safe in the power of His eternity, in a house not His own, as it were : He lives and acts in it, but is yet aloof as well as immune from its gradual breakdown at the hand of Time. The other suggests that this same inner resident is also a master of the house, capable of rebuilding and transforming it into a Nature-image of the Spirit-reality.

In many respects the Sonnets are the best brief approach for us to *Savitri*. For here we have not only the element of sheer spiritual Light as in that epic. We have also the element of spiritual autobiography that is found worked in a non-personal narrative shape into that poem in detailed abundant vividness. In addition we have the element of spiritual philosophy found there in the form of general ideas, a world-view illustrated by the legend and illumined by its symbolic presentation. Of course, rhyme-schemes are followed here, whereas *Savitri* is blank verse, but the sustained pentameter anticipates the five-foot mould of *Savitri* and the sparse enjambment renders the anticipation more a fore-glimpse and there is a fair amount of significant modulation on the iambic base to recall to a degree the blank-verse technique : for instance,

x / x x / / x / /
I walk | by the | chill wave | through the | dull slime...

x x / / x x / / x /
In a | pale mid|night the | moon's sil|ver flare...

/ / x / / / x / / /
Black fire | and gold | fire strove | towards | one bliss...

x / x x / x / x x / x x /
My soul | unhori|zoned wi|dens to mea|sureless sight...
/ x x x x / x / x x / x /
Victory | is Thy pas|sage mir|rored in For|tune's glass...
x / / x x x / x x / x /
And bright | suddenness | of wings | in a gol|den air...
/ x \ x / / x x x /
Man on| whom the| World-U|nity |shall seize...[1]

No doubt, the lyric tone is much in evidence in the Sonnets, but in *Savitri* too it is not absent. Besides, whatever epic tone affined to *Savitri*'s that is already in the Sonnets is helped out better because something of the graver, more strongly cut, more marshalled power of epic construction is introduced by the very nature of the Sonnet-form, a general insight into which a letter of Sri Aurobindo gives us : "In a sonnet, thought should be set to thought, line added to line in a sort of architectural sequence, or else there should be a progression like the pressing of waves to the shore, with the finality of arrival swift in a closing couplet or deliberate as in the Miltonic form."

* *

About the composition of all his poetry (and even of all his prose) ever since the experience of the utterly silent mind in 1908, Sri Aurobindo has written in a letter : "I receive from above my head and receive changes and corrections from above without any initiation by myself or labour of the brain. Even if I change a hundred times, the mind does not work at that, it only receives. Formerly it used not to be so, the mind was always labouring at the stuff of an unshaped formation. The poems come as a stream beginning at the first line and ending at the last—only some remain with one or two changes, others have to be recast if the first inspiration was an inferior one." *Savitri* was recast eight or ten times "under the old insufficient inspiration" : afterwards it was written and rewritten wholly "from above".

Apropos the blank-verse *Savitri* we may touch on the "Miltonism" so often attributed to this epic. To be in general Miltonic is surely no defect, provided one is not merely an echo. But it does not help the ends of criticism to see Miltonism as soon as we have anywhere a high-pitched blank verse

[1] Or

/ x / x / / x x x /
Man | on whom | the World-U|nity | shall seize...

embodying at some length an epic or semi-epic theme. Of course, repeated end-stopping, as in *Savitri*, is bound to de-Miltonise the basic mould. But even the presence of enjambment is insufficient by itself to constitute the Miltonic movement. On the side of form, the latter consists not only of run-over lines but also of complicated sentences and grammatical suspenses building up a closely-knit verse-paragraph in an English markedly Latinised in its turn. On the side of style, the *differentia* is well touched off half-humourously by Sri Aurobindo himself in a remark drawn by the attachment of the Miltonic label to his lines :

> The Gods above and Nature sole below
> Were the spectators of that mighty strife.

"Miltonic ?" asks Sri Aurobindo and goes on to answer : "Surely not. The Miltonic has a statelier more spreading rhythm and a less direct more loftily arranged language. Miltonically I should have written

> Only the Sons of Heaven and that executive She
> Watched the arbitrament of the high dispute."

On the side of substance, it is the strongly cut imaged idea in a religio-philosophical mood that is Miltonism—the substance which is proper, in one of its aspects, to what Sri Aurobindo has distinguished as the Poetic Intelligence from the really spiritual ranges that are overhead.

Not that thought-form is absent in *Savitri* : there is plenty of it and that is why the poem is a philosophy no less than a legend and a symbol. But the thinking is not from the mental level which is usually associated with thought. Thought-form can be taken by what arrives from overhead through the Yogi's silent mind and the philosophy in *Savitri* is an idea-structure expressing a mystical vision, a spiritual contact or knowledge which have come by processes of consciousness other than the intellectual. The thought-element in *Savitri* therefore differs from that which is found usually in poets credited with a philosophical purpose—even a poet like Milton whose rhythmic roll seems to have a largeness reminiscent of overhead inspiration. For, though the rhythm catches something of the overhead breath, Milton's substance, as Sri Aurobindo has pointed out in a letter, "is, except at certain heights, mental—mentally grand and noble" and his "architecture of thought and verse is high and powerful and massive, but there are usually no subtle echoes there, no deep chambers : the occult things in man's being are foreign to his intelligence." And it is because of the mixture of a semi-overhead sweep of sound with a mostly intellectual-imaginative substance that Sri Aurobindo, for all his ad-

miration for Milton, has said : "The interference of this mental Miltonic is one of the great stumbling-blocks when one tries to write from 'above'."

Some notion of the difference between the "mental Miltonic" and the overhead Aurobindonian may be caught, together with other impressions of the latter's rare quality, if we compare a few phrases collected from several sections of *Paradise Lost* with a few from the opening of *Savitri.* Milton apostrophises the Divine Spirit :

Thou from the first
Wast present, and with mighty wings outspread
Dovelike satst brooding on the vast abyss
And madst it pregnant.

He addresses too the original spiritual Light :

Bright effluence of bright essence increate !...
Before the Heavens thou wert, and at the voice
Of God as with a mantle didst invest
The rising world of waters dark and deep,
Won from the void and formless infinite.

About the advent of this illumination we may quote him further in the verses :

But now at last the sacred influence
Of light appears, and from the walls of Heaven
Shoots far into the bosom of dim Night
A glimmering dawn.

He has also depicted an ethereal revelation, an entrance to God's grandeur, in the illumined distances :

The work as of a kingly palace-gate,
With frontispiece of diamond and gold
Embellished ; thick with sparkling orient gems
The portal shone, inimitable on Earth
By model, or by shading pencil drawn.

Now look at *Savitri* :

...The huge foreboding mind of Night, alone
In her unlit temple of eternity,
Lay stretched immobile upon Silence' marge.

Almost one felt, opaque, impenetrable,
In the sombre symbol of her eyeless muse
The abysm of the unbodied Infinite...

A long lone line of hesitating hue
Like a vague smile tempting a desert heart
Troubled the far rim of life's obscure sleep.
Arrived from the other side of boundlessness
An eye of deity pierced through the dumb deeps...
Intervening in a mindless universe,
Its message crept through the reluctant hush
Calling the adventure of consciousness and joy
And, conquering Nature's disillusioned breast,
Compelled renewed consent to see and feel.
A thought was sown in the unsounded Void,
A sense was born within the darkness' depths,
A memory quivered in the heart of Time
As if a soul long-dead were moved to live...

Into a far off nook of heaven there came
A slow miraculous gesture's dim appeal.
The persistent thrill of a transfiguring touch
Persuaded the inert black quietude
And beauty and wonder disturbed the fields of God.
A wandering hand of pale enchanted light
That glowed along a fading moment's brink,
Fixed with gold panel and opalescent hinge
A gate of dreams ajar on mystery's verge.

A juxtaposition may also be made of the lines—

The dubious godhead with his torch of pain
Lit up the chasm of the unfinished world
And called her to fill with her vast self the abyss—

where the intellectual style is clean overpassed and the well-known phrases of Francis Thompson's about the human heart's unrealised grandeurs:

The world, from star to sea, cast down its brink—
Yet shall that chasm, till He who these did build
An awful Curtius make Him, yawn unfilled.

The comparison is interesting particularly because, while it is certain that Sri Aurobindo knew of the act of the fierce Roman patriot Sextus Curtius who jumped, horse-backed and full-armoured, into the deep trench which according to the augurs had to be packed with what Rome deemed most precious if she was to escape heavenly punishment, it is equally certain that he had not seen Thompson's lines where some of the very words used by Sri Aurobindo—"world", "chasm", "fill"—occur. We become aware how an afflatus with the same charge, as it were, of imaginative words comes in sheer intuitive visionariness and with an undiluted overhead rhythm in the one instance and in the other with a no less poetic impact but with a more intellectually formulated substance and a vigorous movement which has a rather staccato effect in certain places and which, even when there is a wide sweep, seems to go from point to point in order to enlarge itself instead of presenting immediately a sense of the mysterious depths of being that are astir in the yawning chasm and the tremendous greatness of the Presence that alone can appease them.

Not only the intuitive directness blended with a keen gnomic turn is remarkable in the line:

Earth's winged chimeras are Truth's steeds in Heaven.

The line is notable for its metrical structure also. We have two equal parts balanced on either side by the connecting verb "are" which implies their equivalence on two different planes—and the exact balance of essential significances constituted by the identical number of syllables is reinforced by the stress-scheme being precisely the same in either part: two consecutive stresses followed by a stress between two slacks—

/ / x / x / / x / x
"Earth's winged chimeras", "Truth's steeds in Heaven".

Metrical as well as rhythmical effects of expressive originality are abundant in *Savitri*. There is:

With the Truth-Light strike earth's massive roots of trance.

Here we have a sense of both striking power and massive rootedness through the five successive stresses after the first two words. Or take

/ x   / x   /   x   / x   x   x   /   /   /
Heaven's wa|ters trailed | and dribbled | through the | drowned land.

Here, together with the various suggestive alliteration, particularly of "d" in association with "l" and "n", we have a scansion diversely pointing the many shades of the description.

We have again some fine metrical and rhythmical effects in the passage about the hierarchy of worlds towards the close of Book I, Canto 5. The lines,

Her gulfs stood nude, her far transcendences
Flamed in transparencies of crowded light,

have a strong startling impact of disclosure in the three consecutive stresses at almost the beginning, the last two of them on quantitatively long syllables reinforcing the sense of pierced and penetrated depths. The second part of the opening line has two unstressed syllables at the end, giving a sense of the remote and unseized. The inverted foot, a trochee, starting the next line counteracts this sense and creates a revelatory stroke and the word "transparencies" which balances the word "transcendences" of the preceding line and has the same dying-away slack-ending gives now an impression which is the very opposite of the remote and unseized, an impression of the unresisting and easily grasped. The final phrase "crowded light" is all the more accurately expressive because the stresses are not successive: the light, for all its crowdedness has yet to be not dense but transparent and this is achieved metrically and rhythmically by a slack coming between the stresses, while the crowdedness is conveyed by the divided stresses falling on two quantitatively long syllables and thus counteracting whatever dispersiveness may be suggested by the division.

Another piece of metrical and rhythmical memorableness is the line,

A last high world was seen where all worlds met.

Here the coming together of stresses in exactly the same way in two places (the first two feet and the last two) and the close play of long quantities there and the stance of a single long quantity in the middle foot of the line's five and the arrangement of the vowel sounds either differing from or agreeing with one another and, finally, the unbroken uniform run on and on of monosyllables—

all these conjure up vividly the subtle reality expressed with simple and clear words.

The passage about the abysm of Hell in Book II Canto 7, one of the most intensely etched in *Savitri*, has a marked play of alliteration in several lines hammering home the ubiquitous hellishness:

> Neighbouring proud palaces of perverted Power...
>
> The implacable splendour of her nightmare pomps...
>
> Trampled to tormented postures the torn sense...
>
> A bull-throat bellowed with its brazen tongue...
>
> A travelling dot on downward roads of Dusk...
>
> In a slow suffering Time and tortured Space...

In the use and choice of words, too, *Savitri* comes often with highly original gestures. There is not only the uplifting of a non-poetic word beyond its common connotation into poetic effectiveness, as in

> Then shall the business fail of Death and Night,

where the commercial note is fully exploited by "fail" being added to "business" and even a partnership indicated. There is not only an energy of unsqueamish violence which is yet memorable poetry, as in

> Then perish vomiting the immortal soul
> Out of Matter's belly into the sink of Nought.

There is not only a drawing upon other languages for exact effects, as in

> Knowledge was rebuilt from cells of inference
> Into a fixed body flasque and perishable,

where the French word "flasque" is more significant in sound and serves better the rhythmic end than would its English synonyms—"slack", "loose" or even "flaccid". Over and above all these gestures of original utterance Sri Aurobindo shows also an inventive audacity by employment of new words

and new usages, either based on English or continental languages. We have a French noun converted into a verb :

A single law simplessed the cosmic scheme—

or a similar treatment of an English noun :

Ambitioned the seas for robe, for crown the stars.

We have, however, a clear neologism for "immensities" in

And driven by a pointing hand of light
Across their soul's unmapped immensitudes,

on the analogy of "infinitudes" to pair "infinities."

In Book VII Canto 5, concerned with the finding of the Soul, the line

A being no bigger than the thumb of man,

is a translation from the Katha Upanishad where the inmost soul of man, divine in essence, governing his many lives and evolving through the ages into the Supreme Spirit's infinity, is spoken of in these terms.

In the long passage beginning

But now the half-opened lotus of her heart
Had bloomed and stood disclosed to the earthly ray;
In an image shone revealed her secret soul.
There was no wall severing the soul and mind,
No mystic fence guarding from the claims of life.
In its deep lotus home her being sat
As if on concentration's marble seat,
Calling the mighty Mother of the worlds
To make this earthly tenement her house.
As in a flash from a supernal light,
A living image of the original Power,
A face, a form came down into her heart
And made of it its temple and pure abode.
But when its feet had touched the quivering bloom,
A mighty movement rocked the inner space

As if a world were shaken and found its soul :
Out of the Inconscient's soulless mindless Night
A flaming serpent rose released from sleep...

an experience is described, which is well-known to Indian Yoga. But here the process is a little different. The Power or Shakti of the Divine—Kundalini—sleeping coiled like a serpent in the *chakra* or lotuslike circle in the subtle body—*sukṣma śarīra*—at a place corresponding to the base of the spine in the gross physical body is here awakened not directly from below by Yogic concentration and special breath-exercise but by the descent of an Overhead Force into the lotuslike circle situated in the heart-region through which the evolving soul, the being no bigger than the thumb of man, gets most directly into contact with the rest of man's complex nature organised round it.

K.D. SETHNA

OUR GRATITUDE TO SRI AUROBINDO[1]

ACROSS the white untrodden trail,
Through shrouded times and mystic spaces
And rugged seas and sands and firmaments,
Gold-winged soul of crowning graces,
Fulfiller of divine descents,
Missioned on earth he broke,—him hail.

He dawned, he shone, the sun of noon
Blazed golden overhead,
Flaming the labyrinthine body of Nature
To mould a perfect figure in the pure of moon,
Raise it to high harmonious stature
Where happy heaven and earth are wed.

Him hail, through all his life who bore
World's burden gravitating,
Who healed the hidden wounds
Of time chaotic and frustrating—
Blind time a-grope,
All lost to higher hope,
Away from the shore
Of the saviour Spirit infinite
Whose love and might

[1] Inspired by the Mother's meditation on the subject, on the eve of Sri Aurobindo's birthday on 15. 8. 1957.

He brought near so that, freed from prisoner rounds,
Earth's long-jammed wheel
May roll now further on,
And she may, flushed in Heaven's light,
Perfected, her aeonic aim reveal
And live immortal evermore.

To him who has withstood
The Chasm's black infinitude,
Looses from his death-sunk abode of sun
Compassion's golden hounds,—
Till Death is hunted out, God's fiat done,—
On his birth's eve our humble gratitude.

14-8-1957.

HAR KRISHAN SINGH

POETRY AND "THE UNCONSCIOUS"

EVERY poem evokes in us a sense of wonder, for it weaves by means of ordinary words a spell which cannot be accounted for by any analysis of the material used. Take a line and express its idea in other words and you find that the evocative power has vanished. Even the poet himself cannot be expected to be conscious of the undertones and overtones that his lines might be charged with. For instance, "that miraculous line of Tennyson's:

> And after many a summer dies the swan

loses all its radiance, as Aldous Huxley once remarked, if for *swan* we substitute the word *duck*. The word *swan* conjures up a visual image of exquisite whiteness, luminosity, and grace, whereas the vision produced by the word *duck* is of a small, waddling creature devoid of dignity and of pathos. But over and above the purely visual representation of the swan and of the duck, we are conscious of a host of associations which influence our response to these words. Out for a duck, a dying duck in a thunderstorm, a man with ducks' disease—such are the associations which are likely to present themselves to the average reader. The swan brings with it an aura of mystery and of beauty as it sails down the reaches of the mind, recalling the silver-throated swans of the madrigalists and of Spenser, the swan which caressed Leda, the swans which haunt some of Yeats's finest poems, and those living birds which still glide unruffled on the Backs at Cambridge. Tennyson's swan dies against the traditional background of English poetry, amid the lamenting music of five centuries."

This long extract from *The Fire and the Fountain—An Essay in Poetry* by John Press[1] gives us a hint about the most exquisite appreciations of poems with which the book is replete. The author is endowed with a keen sensibility, and combines a wide-winged imaginative perceptiveness with a subtle analytical mind that go to make a true critic of poetry. Everywhere he brings to bear on poems a mind unbiassed by orthodox critical modes but not vehement in advocating a new heresy.

The book sets out with an enquiry into the nature and source of that most elusive thing, inspiration, which transforms an experience into something

[1] Oxford University Press, 25 s. net.

that defies all rational analysis. Poets have always felt in themselves the mysterious working of what Sri Aurobindo calls an "overhead" influence that makes the poet merely a channel and amalgamates all his past recollections and experiences to produce a compound whose properties are quite different from the ingredients which went into its composition. We read in chemistry books that a chemical compound cannot be formed without heat and strangely enough it is the incandescent heat of inspiration that fuses the most disparate elements in experience into the unity of a poem. The author gives us the own words of the poets which throw a revealing light on the nature of the poetic afflatus. Blake wrote in a letter about one of his prophetic books : "I may praise it, since I dare not pretend to be any other than the Secretary; the Authors are in Eternity." Milton's words about the "eternal Spirit, who can enrich with all utterance and knowledge, and sends out his seraphim with the hallowed fire of his altar to touch and purify the lips of whom he pleases," are reminiscent of Isaiah who "describes how he could proclaim the Word of God only when his unclean lips had been purified by a seraph with a live coal in his hand."

Poets are well-known for their mental abnormalities and are, often enough, driven over the border. Shakespeare's lunatic and lover keep pace with the poet and for Dryden

> Great wits are sure to madness near allied
> And thin partitions do their bounds divide.

The author quotes Plato's words : "He who, having no touch of the Muses' madness in his soul, comes to the door and thinks he will get into the temple —he, I say, will not be admitted." And then Drayton's couplet on Marlowe :

> For that fine madness still he did retain
> Which rightly should possess a poet's brain.

A.E.Housman observed that the eighteenth century produced only four genuine poets all of whom shared the quality of madness.

How are we to account for this all ? The author shows that though poets have been everywhere observed to be infected with madness yet it has never been sheer madness; it has always been *a sort* of madness. According to him the poets are endowed with an unusually keen sensibility which responds to the experiences of life with an acuteness and intensity unknown to the average men. "The curve of his imagination rises through sensibility to vision and finally to ecstasy, and all is well if he remain in command of his imagination,"

But this does not throw any light on the source from which the poetic inspiration rushes out. Like the ether in Science the modern critics have invented "the unconscious". Just as the scientist had to ascribe contradictory attributes to the ether, similarly the modern psychologist very facilely accounts for the lowest and the highest modes of consciousness as having originated from the unconscious. On the one hand the unconscious seems to be a dark underground cellar where the light has never shone and which is teeming with the grossest impulses that suddenly burst through the screen and disrupt the whole moral fabric of our life and, on the other, the poet is the mouthpiece of oracular utterances of spiritual Truth. No doubt, something unconscious which should rather be termed the inconscient is a reality and any splintering of the screen that veils it from our sight is fraught with grave dangers. The description given by David Gascoyne of this region is most graphic and vivid. He,

wandering
Through unnamed streets of a great nameless town
As in a syncope, sudden, absolute,
Was shown the Void that undermines the world,
For all that eye can claim is impotent—
Sky, solid brick of buildings, masks of flesh—
Against the splintering of that screen which shields
Man's puny consciousness from hell : over the edge
Of a thin inch's fraction lie in wait for him
Bottomless depths of roaring emptiness.

Modern psychology and literature are to be congratulated for their boldness to peer into this opaque and impenetrable substratum of things; for, any idealism that does not take into account the abyss where, in the Vedic phrase, "darkness is enveloped in darkness" can only palliate our ills for a while yet never root out the malady. But how shall we account for the higher and still higher modes of consciousness that have emerged from it—the plant, the animal and the man who is perpetually called to transcend himself by rising to superconscient planes ? Surely, as Sri Aurobindo says, this Void of nescience is a mask worn by the omniscient Divine. I quote below the whole of his sonnet "The Inconscient":

Out of a seeming void and dark-winged sleep
Of dim inconscient infinity
A Power arose from the insentient deep,
A flame-whirl of magician Energy.

Some huge somnambulist Intelligence
Devising without thought process and plan
Arrayed the burning stars' magnificence,
The living bodies of beasts and the brain of man.

What stark Necessity or ordered Chance
Became alive to know the cosmic whole ?
What magic of numbers, what mechanic dance
Developed consciousness, assumed a soul ?

The darkness was the Omnipotent's abode,
Hood of omniscience, a blind mask of God.

The author of *The Fire and the Fountain* rightly observes about Shaw : "It was a sound impulse that guided Bernard Shaw to proclaim the sanity of art, but in his criticism, as in his plays, he lacks insight into the depths of darkness and despair that can, perhaps, be illuminated only by the poetic imagination. His remark that it is easier to write poetry than prose and his strictures upon Shakespeare both spring from this inability to comprehend the nature of poetry." And here he sums up his standpoint: "The sanity of art is not merely the apotheosis of common sense but a precarious balance attained only after dangerous explorations through dark places. It is a sanity plucked from danger, the calmness at the heart of a whirlwind."

Hardy has also shown a rare imaginative perception of this Inconscient in his poem "The Sleep-Worker" :

When wilt thou wake, O Mother, wake and see—
As one who, held in trance, has laboured long
By vacant rote and prepossession strong—
The coils that thou hast wrought unwittingly;
Wherein have place, unrealized by thee,
Fair growths, foul cankers, right enmeshed with wrong,
Strange orchestras of victim-shriek and song,
And curious blends of ache and ecstasy ?—

Should that morn come, and show thy opened eyes
All that life's palpitating tissues feel,
How wilt thou bear thyself in thy surprise ?—
Wilt thou destroy, in one wild shock of shame,
Thy whole high-heaving firmamental frame,
Or patiently adjust, amend, and heal?

This is a sonnet of rare poetic intuition taking up the world-wide vision of an eye "that hath kept watch o'er man's mortality" and fusing it with a dispassionate calm, thus creating the miracle of poetic thought. "Vacant rote" for a meaningless and repetitive routine of law blurs the imagery by introducing an auditory image instead of a visual one; but the blurring itself seems effective in suggesting the obscure *mélange* of the Inconscient. Here is a description of the same tenebrous womb by Sri Aurobindo in *Savitri*:

As in a dark beginning of all things,
A mute featureless semblance of the Unknown
Repeating for ever the unconscious act,
Prolonging for ever the unseeing will,
Cradled the cosmic drowse of ignorant Force
Whose moved creative slumber kindles the suns
And carries our lives in its somnambulist whirl.

I have to labour my point because modern criticism of poetry is mostly derived from the current psychological trends and great poets and critics all tend to trace the origin of poetic inspiration to the unconscious. But nothing is explained when you lump with the most savage instincts the most luminous visions of the sun of poetic truth. Sri Aurobindo has written a poem "Shiva The Inconscient Creator" and concludes it with the stanza :

This was the closed mute and burning source
　　Whence were formed the worlds and their star-dance;
Life sprang a self-rapt inconscient Force,
　　Love, a blazing seed, from that flame-trance.

In a note to the poem Sri Aurobindo remarks : "The Inconscient as the source and author of all material creation is one of the main discoveries of modern psychology, but it agrees with the idea of a famous Vedic hymn. In the Upanishads, *Prajna*, the Master of Sushupti, is the Ishwara and therefore the original Creator out of a superconscient sleep. The idea of the poem is that this creative Inconscient also is Shiva creating here life in matter out of an apparently inconscient material trance as from above he creates all the worlds (not material only) from a superconscient trance. The reality is a supreme Consciousness—but that is veiled by the appearance on one side of the superconscient sleep, on the other of the material Inconscience."

(*To be continued*)

RAVINDRA KHANNA

TOMORROW'S CINEMA

THE motion picture is the most fabulous of all the arts. It encompasses all the others—story-telling and poetry, drama, music and the dance, painting and sculpture—with an added magic of its own. No other art can remotely match it for flexibility and inventiveness of mass appeal. This robust offspring of the machine-age, in the brief span of half a century, has achieved mass popularity beyond the wildest dreams of its progenitors.

For the first time in the history of man a miraculous art form has come into being that—for good or evil—can reach both the mind and the heart of the majority of human beings on earth. Four out of five people in India cannot read or write. Nearly half the population of the world is illiterate. Most of the other half does precious little edifying reading. But, with the exception of an infinitesimal percentage, all the world understands and loves motion pictures. Truly the cinema is the universal language.

No other means of controlled mass appeal can compare with the impact of films on the mind of man. But only those who have made a professional study of the phenomenon are aware of the truly fantastic inroads made on mankind by the enchantment of motion pictures. Within the last fifty years the whole trend of mass thought, mass belief, mass behaviour has gone through a revolutionary change as a result of habitual response to the subtle fascination of the silver screen.

TWO-DIMENSIONAL SIREN

The dismal fact, however, is that this unparalleled influence has been largely a detrimental one. Catering to the sensational and scandalous aspects of life has proven so highly profitable a business that every day scores of films are in production, the main ingredients of which are the sensual and sordid, materialism and selfishness, adultery and bloodshed—the whole sorry brood of man's grossest nature. Only a feeble trickle of perhaps a few dozen pictures a year are free from main emphasis on the ignoble aspects of human behaviour.

Since the advent of television this process has become accelerated a thousand-fold; for a television receiving set is merely a miniature screen. Where there were but twenty thousand-odd film theatres in the United States, for example, ten years ago, today nearly forty million American homes are little

cinema houses, in which there is a succession of screened entertainment, free for the turning of a dial, practically around the clock.

Because of the baneful mass influence of the kind of films that predominate, the very invention of pictures has become anathema to some of the best minds in the world, who prefer to avoid the cinema altogether. But this is merely dodging the issue. We do not spurn Gutenberg's great invention because so much trash finds its way into print, or dismiss Edison's phonograph as worthless because of the plethora of cacophony, passed off as music, that is grooved into records. Nor do we boycott Marconi's radio because of the waves of nonsense so often broadcast over the air.

The Golden Captive

The question is frequently asked : "How could an art of such unique promise become so corrupt in so short a time, when all the other arts have enriched the world with so much beauty and rapture ?" The answer lies in the fact that all the other arts had millenniums in which to develop as pure art, in the congenial climate of untainted dedication, and—of supreme importance—for untold centuries they flourished in the devotional atmosphere of religion, which was the womb of them all. The cinema, however, was ill-fated to be born into an age of high-pressure commerce. Before it had a chance to develop as an art, wide-awake merchants kidnapped it in its infancy and turned it into a competitive industry. They made of the silver screen a fabulous two-dimensional bird that has been laying mountains of ostrich-sized golden eggs ever since. They had little time and less desire to develop it as an art.

True, there are occasional instances when, prompted by outstanding creative minds in their temporary employ, the heads of the big film studios sponsor what they term "prestige" films. These generally turn out to be worthy achievements, precious exceptions to the rule, and all lovers of the art are grateful to the creators of such rare film masterpieces.

They are not only a joy to behold, but shining proofs that motion pictures in inspired hands are capable of the highest reach—proof indeed that to the cinema nothing is impossible.

However, these instances are rare—the percentage is in decimals. The scramble for the golden eggs never stops in the major film centres of the world. So all-absorbing is this competition that only once in a blue moon—and blue moons are rare indeed in filmdom—does any one think of aesthetic or cultural, let alone spiritual values in connection with the films turned out by the motion picture assembly lines. You might as well expect Ford to begin turning out cars made of ectoplasm.

THE CRISIS OF HUMANITY

However we may assess the blame, the evil motion pictures have wrought is beyond calculation—but so is their unexplored potential for good.

H.G. Wells has said that the fate of civilization hinges on the race between education and catastrophe. To win this race, it is imperative that the whole mental climate in which mankind lives be transformed, so that nobler thoughts and kinder emotions may take root and flourish in it. There is only one medium that can accomplish this on a large enough scale, the only medium which has the power to reach the minds and mould the lives of the myriad benighted inhabitants of this earth in our time—the cinema.

What is needed is the creation of a constant flow of spiritually charged inspirational motion pictures, whose chief emphasis is on the cardinal virtues and higher aspirations of our being; dramatic treatment of subjects whose central themes are truth, beauty and integrity; tales whose heroes are not quick on the trigger, but men of the more heroic qualities of self-control, forbearance and chivalry; films of heroines whose chief concern is not chasing and catching their men, but who endeavour to bring into their relationship with them the divine endowments of women that can make more god-like human beings of both; stories in which laughter is of the heart, not of the belly; the kind of motion pictures whose creative treatment of such attributes as fidelity, unselfishness and consideration for our fellow creatures is of so impelling a potency that it will gradually counterbalance the debasing influence of the common run of pictures and television programmes; films moreover that do not stress the gross physical and superficial aspects of the life of man, but give pride of place to the profound longing in his heart for something greater than malice and debauchery—something nobler than gluttony and ostentation.

SPIRITUAL POTENTIALS

Apart from the importance of choosing the right stories for such motion pictures as I have in mind, there are other ingredients which enter into the making of films that have unlimited spiritual possibilities and which until now have remained almost wholly unexplored. The spoken word is one of these.

The same thing can be said in many different ways. What distinguishes the master of literature from the ordinary writer is the skill, inspiration and genius with which he expresses what has already been said many times before. There is hardly a concept, a thought, an idea, regardless of its implications,

which has no spiritual potential. In connection with the motion picture of tomorrow, a good deal of pioneer thought will have to be devoted to high-lighting the hidden spiritual kernel in the spoken word.

Another unexplored aspect of the cinema that has great spiritual possibilities is innate in the very magic of motion pictures. The manner in which a scene is conceived; the adroit selection of the background against which it is played; the filmic rhythm and timing set for it by the director; the actual manner of portraying a particular scene by the artistes, under the creative guidance of directorial inspiration; the choice of emphasis—not unlike the cardinal point chosen by painters in conceiving their masterpieces—and many other minute considerations which make up the complex pattern of a scene, are all possible avenues of spiritual momentum, totally unused until now by the makers of motion pictures, an El Dorado for the producers of tomorrow's films.

Other important elements in motion pictures are music and sound effects. Music has often been referred to as the language of the soul, but hardly any creative use of music has been made to underline, emphasize, high-point or counterpoint the spiritual content and potential of motion pictures. The same, to a less degree, may be said about sound effects. This whole field is virtually unexplored, and for our purposes a rich mine of spiritual gold.

Colour is still another ingredient that has enormous spiritual potentialities in motion pictures. Up to now colour has been used in films with barely any thought of its subtle magic, though serious students of colour are aware of the great effect it has not only on human behaviour and reaction, on thinking and the emotions, but also on the deeper soul-life of man. This power of colour to influence man will be made full use of in the motion pictures I have in mind.

Transcending all these is the mystic potential of motion pictures. This has little directly to do with the spoken word, visual magic, music and sound effects, or with colour. It is a domain all its own and does not manifest in anything seen or heard in films. It is innate in that something—unseen and unheard—which at times is felt by audiences, but of which, more often than not, they are unaware. It is the sum total of film magic that subconsciously exerts a powerful influence on audiences, but the nature of which eludes most of the world's film makers. For only an esoteric approach will yield its secret, and the film industry of today is not of the initiated. Creative use of this virgin potential will be of immense value in the films of a greater tomorrow.

The Language of the Masses

In conceiving and producing motion pictures of such new dimensions it is imperative to keep in mind the kind of audiences to which they are designed

to cater. For we must aim at the mass mind, not isolated individuals or groups that have already risen above the common level. To reach the mind of the masses these pictures will have to be rich in entertainment values, showmanship and human interest. Mass audiences have been fed so long and so persistently on such film ingredients that until their tastes become more refined, they cannot be expected to clamour for or even accept fare that is lacking in them. These films of tomorrow will therefore have to be motion pictures of such fascination and mass appeal that they will find ready favour with the cinema and television audiences the world over for which they are intended.

Need for Action

Countless men and women the world over have long agitated and striven to bring about an improvement in the quality of the general run of motion pictures, but with barely perceptible results. For no amount of theorizing or sermonizing, however well meant, will transform the old-time makers of films into champions of the Age of the Spirit. To look to them for leadership in the revolutionary change in production concept required for tomorrow's motion pictures is merely chasing after a will-o'-the-wisp.

The urgent need now is for pioneer action. The swift momentum of our time calls for an acceleration of mass progression toward new horizons of consciousness. A new dawn for mankind is possible only if the world-mind becomes speedily aware of the higher truth, so long hidden from it. I am firmly convinced that the cinema is the only medium that can accomplish this miracle on a scale large enough to bring about the desired result.

The Age of the Spirit

India's sublime Sri Aurobindo foresaw this pregnant moment nearly half a century ago:

> The coming of the spiritual age must be preceded by the appearance of an increasing number of individuals who are no longer satisfied with the moral, intellectual, vital and physical existence of man, but perceive that a greater evolution is the real goal of humanity; a spiritual evolution the destiny and therefore the great need of the human being.
>
> If this spiritual change is to be effected, it must unite two conditions... There must be the individuals who are able to see, to develop, to recreate themselves in the image of the spirit, and to communicate both their idea and its power to the mass...And there must be at the same time a mass which

is capable of receiving and effectively assimilating the idea and its power...

That this combination must happen some day is a certainty...

These ideas are likely first to declare their trend in philosophy, in psychological thinking, in the arts...They might develop an achievement of art and beauty which would make the greatness of the past a comparatively little thing.

India's Destiny

About those who are to play a decisive part in the evolution of this phase, and the manner in which it is to be accomplished, Sri Aurobindo declared :

Though the scope must be universal, the initiative can come from India, and the central movement may be hers...

India has always existed for humanity and not for herself, and it is for humanity and not for herself that she must be great...

She is rising to shed over the world the eternal light entrusted to her and cherished by her, for the salvation of humanity, in the seclusion of this peninsula from of old...

The principle of such changes in nature seems to be a long, obscure preparation, followed by a swift gathering up and precipitation of elements into the new birth, a rapid conversion, a transformation that in its luminous moment figures like a miracle.

The time is ripe for such a miracle, and I am convinced that India is the country where this metamorphosis is first to take shape. It is only through the creative fusion of the technical and organizational perfection of the western cinema and the immortal spiritual genius of India that the films of a greater tomorrow can come into being. Only the master touch of timeless India can transmute the silver of the screen into the gold of the spirit Thus and in no other way can we shed the transforming light of India's and the world's immortal teachings into the dark corners of the mass-mind to speed the coming of the New Age.

Alexander Markey

IS OUR CHRONOLOGY FOR ANCIENT INDIA CORRECT?

Some Criticisms and Suggestions

15

Coming to Chandragupta I, the founder of the Gupta dynasty, we do not find anything against his identification with the Sandrocottus who was a contemporary of Alexander. The agreement of the two names is, of course, perfect and in this the first Gupta stands on a par with the first Maurya. They are on a par too as regards their capital. Paṭaliputra was undoubtedly the capital of Chandragupta's successors, beginning with his son Samudragupta. In the Allahabad Pillar inscription[1] we have the phrase : *daṇḍair grāhavat aiva Kota-kulajaṁ Pushp-āhvaye krīḍatā.* It may mean that Samudragupta was taking his pleasure at Pushpahvaya, which is another name for Paṭaliputra, while he made his armies capture the member of the Kota dynasty, or that he was taking his pleasure while he made his armies capture the Kota-prince at Pushpāhvaya, or perhaps that just as if he were taking his pleasure at Pushpavaya (i.e. with utter ease, with the sense of mere amusement) he made his armies capture the scion of the Kotas, or that just as if he were taking his pleasure he made his armies capture at Pushpāhvaya the prince of the Kota family. In any case, Pāṭaliputra, the Palibothra of Sandrocottus, is associated with him, but if the member of the Kota dynasty was captured at Paṭaliputra it would seem that prior to that incident this city was not in Gupta hands : Chandragupta had either never possessed it or else somehow lost it after previous possession. Since, according to the Puranas, he ruled over the tract along the Ganges apparently including the Patna area whose capital was Pāṭaliputra it is more likely that either he was securely in possession of it or was at least master of it once and then lost it. If we do not locate the capture of the Kota-prince at this city, the question of not being master of it at any time before Samudragupta's campaign does not arise.

In Bhandarkar's view[2] it is clear not only from the tradition of the Lichchhavis but also from one of the Nepal inscriptions published by Pandit Bhag-

[1] *Corpus Inscriptionum Indicarum*, Vol. III. The Gupta Inscriptions : No. I, Plate I, pp. 10-17.

[2] *Carmichael Lectures*, 1921, p. 10.

wanlal Indraji[1] that the Lichchhavis used to rule at Pāṭaliputra: so Chandragupta can be said to have ruled at it after his marriage with the Lichchhavi princess Kumāradevi. R.C.Majumdar[2] regards as not quite conclusive the evidence for Lichchhavi rule; he inclines to place the Lichchhavi territory between Nepal and Vaisali, but since he accepts Chandragupta as ultimately the sovereign of, among other territories, the whole of Bihar which must include Pāṭaliputra the point we are urging is as fully granted by him as by Bhandarkar.

In the matter of origin we have seen that modern scholarship does not find the first Maurya to have been of a low caste or even of an inferior family : "Chandragupta belonged," says Mookerji,[3] "to the Kshatriya clan called the Moriyas originally ruling over Pipphalivana which probably lay in U.P." With the first Maurya in mind, modern scholarship interprets the Greek phrase—"born in humble life"—about Sandrocottus rather liberally as just meaning that he did not come of such grandiose royalty as would be of a ruler of Magadha. The first Gupta seems to answer more stringently to the Greek description. For, he belonged to a family which, though said to have exercised rule as petty chiefs over some portion of Bihar[4] or of Bengal,[5] was, as its very name suggests, not Brahman or Kshatriya but of lowly origin : according to the Vishnu Purana, names ending in "Gupta" are characteristic of the Vaishya and Sudra castes.[6] Then there is the fact of the importance given by the Guptas to Kumāradevi. Her image and name regularly appear on Chandragupta's coins as if to support by his association with her his right to his new title of *mahārājādhirāja* ("supreme king of great kings") which none of his ancestors had held. "Samudragupta", V. Smith[7] remarks, "was always careful to describe himself as being 'the son of the daughter of the Lichchhavis', a formula implying the acknowledgment that his royal authority was derived from his mother." Mookerji[8] writes : "Samudragupta first proudly declares himself as *Lichchhavidauhitra* in his inscription, and not as a *Gupta-putra*, although it is more usual to trace one's lineage on the father's side." As Allan[9] observes, "It was rather the ancient lineage than any material gain resulting from the alliance that impressed the Guptas, who themselves

1 *The Indian Antiquary*, IX, p. 7.
2 *The Classical Age*, pp. 4, 7.
3 *The Age of Imperial Unity*, p. 56.
4 Moreland and Atul Chandra Chatterji, *A Short History of India*, p. 87 (1945).
5 *The Classical Age*, p. 2.
6 P. 298 (Wilson's translation). Of course Gupta families not Vaishya or Sudra are known, but they are exceptions.
7 *The Oxford History of India*, p. 148.
8 *The Gupta Empire*, pp. 14-15.
9 Allan, *The Cambridge Shorter History of India*, p. 88 (1943).

appear to have been of humble birth." It is rather interesting to find Allan here using an exact equivalent of the Greek phrase : "born in humble life".

Majumdar[1] also stresses the Lichchhavi-connection: he says that Samudragupta, the issue of Chandragupta's marriage with Kumaradevi, "is always referred to in the genealogical account of the Gupta records as 'the daughter's son of the Lichchhavis', whereas we do not come across any such reference to the maternal family of the eight or ten other Gupta rulers, mentioned in the same records." However, Majumdar sounds a note of hesitation on the nobility of the Lichchhavis. He argues that the *Manusaṁhitā* which regards them as a kind of degraded Kshatriyas (*Vrātya-Kshatriya*) was held in high respect about the time of the Guptas and therefore the marriage-alliance of Chandragupta was probably valuable from a political rather than a social point of view. Of course the political value need not be underrated in order to play up the social, but neither need the whole thing be *vice versa*. Raychaudhuri[2] gives us the right outlook on the *Manusaṁhitā*'s designation of what he calls "the most famous clan of the Vajjian confederacy." He says : "Indian tradition is unanimous in representing the Lichchhavis as Kshatriyas. Manu concurs in the view that the Lichchhavis were Rājanyas or Kshatriyas (X.22). But they were called Vrātya because they became champions of non-Brahmanical creeds". Although on religious grounds the *Manusaṁhitā* may not accord a high status to them, there could have been no doubt for anyone about their ancient lineage. This lineage must have impressed the popular mind, and when an ancient family had political power it must have figured still more prominently in the general conception and, finally, if the Lichchhavis stood higher socially as well as politically than the Guptas, as they actually appear to have done, we should expect the latter to make much of the former both socially and politically. At least for Samudragupta who is definitely known to have extended his dominions by conquest far beyond the dreams of the Lichchhavis their political importance could hardly be fundamental. With his father, if he was not a conqueror on his own, it might be equal to the social : with himself it was bound to be somewhat subordinate, though not necessarily negligible. Majumdar's hesitation does not appear well-founded.

Next is the question of contact with Alexander the Great and of subsequent fight with his prefects. Here we have no direct and open evidence, but neither is there a shred of such evidence in the history of the first Maurya. And the lack of direct and open evidence in both cases is in keeping with the universal absence of any unmistakable reference to Alexander's invasion in ancient

[1] *The Classical Age*, p. 3.
[2] *The Political History of Ancient India*, pp. 86-87.

Indian records. As we have already said, all we can ask for is some general connection with the Indus region, preferably a fighting connection. Indian tradition does connect Chandragupta Maurya with this region but, as we have demonstrated, in a very indecisive way for our purposes. It connects him, first, by the Buddhist story of his education at Takshasila (Taxila) and, secondly, by the drama *Mudrārākshasa* which makes King Parvataka bring north-western tribes to the Maurya's help in the struggle against the last Nanda. In the case of the first Gupta the connection may first be sought through literature, the drama *Kaumudīmahotsava* of which we have already spoken and to the date of which the Guptas are much closer than are the Mauryas to that of the *Mudrārākshasa* and which is of far greater help to us in the question before us than the other piece in relation to the first Maurya. We have already mentioned Mankad's claim that, since its hero Chandasena is said to have obtained the throne of Magadha by an alliance with a Lichchhavi princess and since in the whole history of Magadha no other king than Chandragupta I can be thought of as having come to its throne with a Lichchhavi princess's help, it is impossible not to identify Chandasena with the first Gupta. But we have modified Mankad's claim by showing that Chandasena is partly Chandragupta I and partly the Naga Chandrā*m*śa. As a result of this double identity we have, on the one hand, things utterly Chandrā*m*śan and, on the other, things entirely Chandraguptan and, in the middle, things common which have shades Chandrā*m*śan and shades Chandraguptan. The caste of Chandasena is a thing common, for both the Naga king and the first Gupta were of low social status—and in this common thing, if the Chandrā*m*śan shade is the extreme meanness seen in the caste, the Chandraguptan could be the name of the caste itself: Kāraskara. And through this name we can reach the milieu of the contact between Chandragupta and Alexander.

Kāraskara, says Mankad,[1] can in spoken language change to Kākar, and Jayaswal thinking along the same line has actually identified the Kāraskaras with the Kākar Jats of the Punjab. Mankad further submits: "According to *Baudhāyana Dharmasūtra* (1,14), the Kāraskaras were living beyond the Hindu country proper and any one visiting their country had to undergo a course of *prāyaśchitta*, as they were considered low. Countries to the west of the Indus are generally taken to be beyond the pale of Hinduism, and we may find the name Karkar or Kākar or Kokala applied to certain tribes and localities in Sind, Baluchistan and the Punjab. There is a Kākara talukā in Larkhana district in Sind. There is a Kakar range in Baluchistan. There are some localities of the same name near about." We have thus a hint about the Indus-region

[1] *Op. cit.*, p. 265.

as the original home of the Guptas and the possibility is created for Alexander's meeting with the first Gupta when the latter had not yet become king.

The possibility grows clearer as we hear from Mankad[1] that Arrian,[2] describing Alexander's southward retreat, not only mentions a territory called Oreitai which modern historians howe identified as the present Las Bela state situated in the Indus-delta and having its south-eastern coast on the Arabian Sea, but also notes a place named Kokala near the border of Oreitai. The name Kokala at once sends us back to the appellation Karkar or Kakar or Kokala applied to tribes and localities in Sind and Baluchistan no less than the Punjab. So, Oreitai being Las Bela state, Kokala on its border can be identified, as by Mankad, with Kakar on the southern coast of this state, near the modern Kandewari. And if it can, we have precisely the place we have decided on the strength of the *Kaumudīmahotsava* to be Chandragupta's home. Thus Arrian directly links up with Alexander the indirect support which, in Indian Literature on the first Gupta, exists for the accounts of Plutarch and Justin about the contact of Sandrocottus with the Macedonian invader.

Arrian's Kokala helps us also to believe Chandragupta to have fought the Greek prefects just as Sandrocottus is said to have done. If he had his home in the region of the lower Indus, near the mouths of this river, he could easily have formed there a rallying point for a revolt against foreign rule and for an extension of his rights to the whole territory occupied by the prefects.

Here, with mention of the mouths of the Indus, the second pointer to the connection of Chandragupta with this territory may be brought in with the greatest appropriateness. The pointer in question is the famous Meherauli Pillar inscription of "Chandra", engraved in a Brahmi script similar to that of the Allahabad Pillar inscription of Samudragupta.[3] This Chandra over whom much controversy has raged is credited, in Mookerji's words,[4] with the following achievements :

"1) Conquest of the Vaṅga countries (*Vaṅgeshu*) by his battling alone against a confederacy of enemies united against him (*śatrun-sametyāgatān*);
2) Conquest of the Vāhlika in a running fight across the seven mouths of the river Sindhu;
3) Spread of his fame, as a conqueror, up to the southern seas;
4) Achievement of sole supreme sovereignty in the world (*aikādhirājyam*) by the prowess of his arms."

Mookerji adds : "The inscription then relates how the king celebrated his con-

[1] *Ibid*
[2] *Indica*, XXIII, 7.
[3] *The Gupta Empire*, p. 69.
[4] *Ibid.*

quests by setting up his pillar in honour of Lord Vishnu on the hill known as *Vishṇupada*."

A running fight across the seven mouths of the Indus is just what we want. But what about the Vahlikas ? Can they be equated to the Macedonian prefects ? We believe that they can. But before we attempt anything we have to meet the query : Is it at all possible to identify Chandra of the inscription with Chandragupta I ?

The bulk of scholarly opinion identifies him with Samudragupta's son, Chandragupta II Vikramaditya, known on some coins as Chandra and from a few sources as a conqueror. But some scholars incline in favour of Samudragupta's father. Against the former identification three points may be urged at the very begining. The term used for "prowess" is not the one characterestic of Chandragupta II, namely, Vikrama, but Virya which seems to get connected with his grandfather through Samudragupta's use of it on the Allahabad Pillar. The expression "having in faith fixed his mind on the god Vishnu" is similar in spirit yet significantly different in form from the one repeated stereotypically by Chandragupta II : *paramabhāgāvata*. Thirdly, in no inscription of this later king is the short form "Chandra" used, so that the abbreviation here in an inscription rather than on a coin where space lacks is a little surprising. As we have no inscription of Chandragupta I to compare with the present we can hardly register surprise if "Chandra" is employed in his case. On the contrary it is what we may expect : the necessity of sticking to the name-ending "Gupta" as a dynastic title was felt only by his successors after his designation "Chandragupta" had carried a fame wanting to his ancestors and giving him the right to call himself Mahārājādhirāja (suggestive of the Meherauli Pillar's *aikādhirājyam*) for the first time in the family in contrast to the mere Mahārāja of his father and grandfather. His father Ghatotkacha bore no "Gupta"-ending though Ghatotkacha's own father was Gupta. Chandragupta himself had no particular reason to attach importance to the terminal component of his own name. And, on the positive evidence available, the abbreviation "Chandra" itself is not ruled out for him any more than for his grandson. Special coins commemorating his marriage with Kumaradevi bear the legend "Chandra".[1] And that they were issued by himself and not by anybody else on his behalf is now certain : Majumdar[2] tells us, "The view that the coins were issued by Samudragupta is no longer held by any scholar."

We can say too of Chandragupta I, as of his grandson, that independent sources lead us to infer a conquering career for him. The assumption of the title

[1] *Ibid.*, p. 15.
[2] *The Classical Age*, p. 4, footnote 2.

Maharajadhiraja should be sufficient proof of a territorial expansion. Mookerji[1] agrees : "The title of 'King of Kings' must have been acquired by his conquests by which he was able to rule over an extensive territory." But it has been generally held that the range of the expansion is summed up in the Puranic statement[2]: "(Kings) born of the Gupta race will enjoy all these territories, namely, along the Ganges, Prayāga, Sāketa and the Magadhas." A dissenting note, however, is struck by Majumdar :[3] "Apart from the uncertainty of the reading and interpretation of the passage, we cannot even be certain that it refers to the period of Chandragupta I." Jayaswal, as we have seen, believes it to refer to the last Guptas and not the very first one. What seems undeniable is at least that it does not refer to one single Gupta. If Chandragupta I is alone meant, why the plural *Gupta-vaṁśa-jāh*,[4] "(Kings) born of the Gupta race", instead of the singular *Gupta-vaṁśa-jah* ? The Puranic statement, while suggesting Gupta sovereignty over the territories specified, cannot be definitely taken to describe just the kingdom of Chandragupta. If the passage is to be translated as by Pargiter, the plural should rather indicate that these territories formed the central block over which the Guptas exercised direct and immediate sovereignty, the area which roughly remained proper to them in the great days of their dynasty for more than two hundred years after Chandragupta had acquired it. Expansion beyond this area is thus not ruled out for any Gupta, including Chandragupta himself.

In support of restricting Chandragupta's domain to the Puranic limits, Samudragupta's Allahabad Pillar inscription is quoted. That inscription shows a series of conquests by Samudragupta roughly beyond the region marked by Prayaga (Allahabad) and Saketa (Oudh) on the west and the Magadhas on the east. But Mookerji[5] draws our attention to a problem connected with the eastern conquests. Three countries are mentioned : Samatata, Davaka, Kamarupa. The last two are covered by Assam. Samatata, says Mookerji, denoted "certain remote parts of Bengal" and "was probably to the east of Tāmralipti and bordered on the sea, as stated by Hiuen Tsang." Now, if Samudragupta's campaign in Bengal was concerned with the outlying districts to the east of Tamralipti, who could have conquered Bengal proper, the central parts, down to "the southern seas" (the Bay of Bengal) ? Were these parts within his empire or not ? We know for certain that Bengal proper was within the empire of his son, because, under his grandson Kumaragupta I,

[1] *Op. cit.*, p. 12.
[2] Pargiter, *The Dynasties of the Kali Age*, p. 73.
[3] *The Classical Age*, p. 4.
[4] Pargiter, *Op. cit.*, p. 53.
[5] *Op. cit.*, p. 69.

its northern portion was called Pundravardhana. Did Chandragupta II annex Bengal proper or did Chandragupta I do so ? Mookerji concludes that in the absence of any definite evidence on the subject the conqueror could have been either the one or the other. And he grants that if Samatata did denote Bengal's outlying portions the central ones could be inferred to have been annexed by a predecessor, and Samudragupta could be considered to have completed the work of his father, and Chandragupta I might be identified with Chandra who conquered the Vanga countries and then, with his rear secured, proceeded to form the central block of Gupta dominion outlined in the Puranas. But, according to Mookerji, the difficulty of the identification is, so far as conquests are involved, that "by no stretch of imagination can Chandra Gupta I figure as a conqueror of territories in the Punjab and North-west which Samudra Gupta was the first of the Gupta kings to deal with."

Is the difficulty genuine ? The imagination can be prevented from stretching only if an irrefutable reason is found from the Allahabad Pillar to keep Chandragupta I within the geographical limits mentioned in the Puranas. If Mookerji himself has considered it possible that Chandragupta did break beyond those limits in the direction of the Vanga countries, the sheer ban is removed and it should be equally possible to imagine him breaking beyond them in the direction of the Punjab and the North-west. The only proviso would be that we should show why Samudragupta would have to deal again with those regions.

Well, we may ask a counter-question : If Chandra is identified with Chandragupta II, why should the latter have to deal again with the Punjab and the North-west after Samudragupta had dealt with them ? Mookerji[1] believes that, though Samudragupta had exercised sway over the northern Sakas, Chandragupta II had also to confront them and that he carried out campaigns in the Indus-region and consolidated his father's conquests. Logically, we can reverse the role of Samudragupta and say that instead of his conquests being consolidated by his son he consolidated the conquests of his own father Chandragupta I. The rationality and the probability of the two statements are exactly the same, provided the first Chandragupta is as likely as the second to have proceeded to the Punjab and the North-west. The sole thing certain about Chandragupta II is that he conquered the Western Sakas, the Mahakshatrapas who ruled in Malwa and Kathiawar. Although we may be sure that he had more conquests to his credit, "we have", writes Majumdar,[2] "no definite information regarding the nature and result of these other cam-

[1] *Op. cit.*, p. 70.
[2] *Op. cit.*, p. 20

paigns." Fact for fact, there is nothing to choose between the two Chandraguptas in the matter of the Punjab and the North-west. Consequently it is just as reasonable to make Samudragupta the consolidator of his father's achievements in those regions as to make Chandragupta II of those of his father.

Even with regard to Bengal the same reverse process is possible. Majumdar[1] does not quite see a difference between the Vanga countries and the regions annexed by Samudragupta. He writes : "Vaṅga denotes Eastern Bengal, nearly the same country as Samataṭa which is included in the tributary frontier states of Samudra-gupta." And by imagining either a revolt there or else a desire by the new king to fix more firmly his sovereignty he explains why, if Chandra was Chandragupta II, the latter had once more to fight Vanga. Can we not with equal logic say that, if Chandra was Chandragupta I, Samudragupta had to reconquer Vanga because of the same reason—most probably a revolt ?

The only possible argument against a revolt whether to the east or to the west of Magadha after the Meherauli Pillar was set up is that this Pillar was set up fairly after Chandra's death and therefore showed an empire intact not only when the emperor died but even at a time when a reconquest by his son would be required. In answer to such an argument we may make use of what Bhandarkar[2] has remarked on the Pillar : "The late Dr. J.B. Fleet dubbed it as a 'posthumous' record of Chandra. He similarly dubbed the celebrated Allahabad Pillar Inscription of Samudragupta as 'posthumous'. The late Prof. G. Bühler, however, adduced many cogent reasons controverting it, and no scholar now regards the latter as a posthumous record. It is a pity that Bühler had no occasion to treat of the Meherauli Inscription. Otherwise he would have shown that Fleet's view in regard to the posthumous character of this record also is based upon his mistranslation of the verses contained in it....The king Chandra whose name the column bears was not dead, but alive, when the eulogy was engraved."

Strictly speaking we do not need Bhandarkar's remark for giving an answer. Even if the inscription was engraved fairly after Chandra's death there is no reason why it should mention any revolt spoiling his record. No revolt could change the fact that Chandra had once fought and won gloriously. And to record only the glorious deeds is the work of a *praśasti*. If the revolt occurred during the very life-time of the king, then too the *praśasti* might omit it : its work could be just to record a past triumph. Particularly if a son or kinsman of Chandra quelled the revolt, there would be still more cause to ignore the set-back in a monument extolling feats of the past.

[1] *Ibid.*

[2] *Indian Culture*, Vol. II, p. 511.

The plausibility of a revolt requiring Samudragupta to go over a considerable portion if not the whole of the terrain of his father's dominion in a new *digvijaya* is suggested by certain circumstances mentioned in Samudragupta's inscription. As already observed, the sentence *daṇḍair grāhavat aiva Kota-kulajam Pushp-āhvaye krīdatā* can mean that, while Samudragupta was amusing himself, his army captured the scion of the Kota family at Pataliputra (*Pusypāhavaya*) instead of that Samudragupta's army, while he himself was taking his pleasure at that city, captured the Kota-prince. In other words, the very capital of Chandragupta I may have been lost. As to how the loss occurred we may guess from the drama *Kamudīmahotsava*. If this drama has clear hints about Chandragupta I, we may see some bit of history pictured in the account[1] of Chandasena going to quell a revolt by his governors among the Sabaras and Pulindas on the frontiers of Magadha and finding himself supplanted at Magadha itself by a scion of the previous line of kings which he had supplanted. Samudragupta may thus be seen as helping to win back Pataliputra and then proceeding to crush the frontier rebellions whether on the east or the west and carrying his arms as far as he could, even beyond the limits of his father's previous victories.

Further, there is the fact known from the Allahabad Pillar that Chandragupta chose his son as his successor in the midst of a public assembly, joyfully exclaiming "Thou art worthy, rule this whole world". This appointment of a son to the throne while the father was yet alive was an extraordinary event and must bear a special significance. Some have held that we have a parallel in the case of Samudragupta's own son. "But this view", says Majumdar,[2] "rests on the doubtful interpretation of an expression which cannot be regarded as certain." The Allahabad Pillar leaves us in no uncertainty. What is more, it implies a greater gesture of recognition than mere appointment of Samudragupta. Majumdar[3] has well remarked : "The royal declaration is usually taken to mean that Chandra-gupta I publicly announced Samudragupta as the heir-apparent to the throne. The words put in his mouth, however, taken literally, mean that Chandra-gupta I formally abdicated in favour of his son." And Majumdar adds in a footnote : "Dr. Chhabra has come to the same conclusion after a critical discussion of the whole passage...(*Indian Culture*, XIV. 141)." The extremely extraordinary character of the event must signify Chandragupta's deep gratefulness for distinguished services rendered by his son, and the services may very well have been a rush to the father's rescue from whatever loss had been suffered, loss demanding just the campaigns undertaken by Samudragupta.

1 Mookerji, *Op. cit.*, p. 4.

2 *The Classical Age*, p. 18.

3 *Ibid.*, p. 7.

In this way our suggestion as to why those campaigns were undertaken in spite of the father's wide conquests receives indirect support and our identification made more plausible.

Our case has now only one argument left to meet. The word *suchirān* apropos the Meherauli Pillar's Chandra has been translated to mean "a long reign" and urged against Chandragupta I by Mookerji[1] who says that he is not credited with a long reign. But what exactly is meant by having a lengthy reign-period ? As many scholars are willing to identify Chandra with Chandragupta II, the latter's reign is evidently considered to satisfy the demand, and what we are called upon to do is to show that Chandragupta I's sovereignty may have extended over a similar period. Is there any genuine bar to our doing it ? Chandragupta II, says Majumdar,[2] "enjoyed a long reign of more than thirty-three years". The starting-point of the computation is provided by an inscription of this king dated the sixtieth year of the Gupta Era and his own regnal year read by some as *prathama* (first) and by others as *pañchama* (fifth). This means that we have nearly sixty years for the reigns of Chandragupta I and Samudragupta. At one time the Ceylonese king Meghavarna who is generally regarded as contemporaneous with Samudragupta was given a reign-period ending only twelve years after what was computed to be the beginning of the Gupta Era :[3] this demanded Samudragupta to have been on the throne in less than a dozen years after his father. But now Meghavarna's reign is considered as ending nearly fifty-nine years after the Gupta Era.[4] So nothing here necessitates putting Samudragupta's accession early. In fact there is no means anywhere of determining the date of it. The only dated inscriptions, in his name, two copper-plates giving respectively the fifth and the ninth year of the Gupta Era, are considered definitely spurious.[5] If these charters were forged to make up for the loss of genuine ones, we should have to believe that Chandragupta reigned for no more than five years or else that the Gupta Era was founded by Samudragupta and not by his father. A reign of five years raises the question of the age at which Samudragupta was selected for the throne. Raychaudhuri[6] holds that Chandragupta married Kumaradevi after his own accession : this would make, on the basis of so short a reign, Samudragupta five years old at the most when chosen by his father to rule—an impossible situation. Smith[7] makes

[1] *Op. cit.*, p. 10.
[2] *Op. cit.*, p. 18.
[3] *The Indian Antiquary*, 1902, p. 195.
[4] *The Classical Age*, p. 11.
[5] Sircar, *Select Inscriptions*, pp. 262, 264.
[6] *The Political History of Ancient India* (5th edition), p. 530.
[7] *The Early History of India* (3rd edition), Pp. 279-80.

Chandragupta marry twelve years before founding the Gupta Era :this would give us a Samudragupta of seventeen years. But in Smith's scheme the Era is founded not on Chandragupta's own accession : he is said to have mounted the throne before marrying Kumaradevi and founded the Era to commemorate his formal consecration. According to Majumdar,[1] the reason for this long interval between accession and formal coronation is not clear, particularly when it is held that Chandragupta had married Kumaradevi twelve years earlier. The most sensible view is that his coronation and marriage were close in time. In that case a passing on of the crown to a son not out of the nursery is unthinkable. To render the fifth year of the Gupta Era possible in Samudragupta's reign we must take the Era as founded by that king—an event not impossible but not very probable either, since Chandragupta was the first Maharajadhiraja of the family and thus marked the beginning of a new chapter in its history. If, however, we do take the Era to have been of Samudragupta's founding, no gauge at all remains for the length of his father's reign and there is no gound to shorten it. On the assumption, which seems the best, that Chandragupta founded the Era and that we can ignore the dates in the spurious inscriptions we can put Samudragupta's accession in any year which would permit time enough for his many conquests. Out of the nearly sixty years to be divided between him and his father we are not restricted by any circumstance from allotting to Chandragupta more than thirty-three years, a reign which a historian like Majumdar could call "long". Hence *suchirān* is quite indecisive as a criticism of our theory.

(*To be continued*)

K. D. SETHNA

[1] *Op, cit.*, p. 4, footnote 5.

Students' Section

THE INTERNATIONAL GEOPHYSICAL YEAR

(The International Geophysical Year (IGY), lasting 18 *months, began on July* 1, 1957, *and will end on December* 31, 1958. *It coincides with a period when sun-spots and other solar phenomena, whose effects are far-reaching on conditions upon the earth and in the earth's atmosphere, will be at their maximum. Taking advantage of this, scientists of more than fifty nations and with widely differing training and skills have joined together for a united undertaking for a better knowledge of our planet. The relation of our planet to the universe, which forms the basis of the search for this better knowledge, is briefly explained in the following article which is the introductory part of an instructive booklet written by Werner Buedeler and kindly provided to "Mother India" by Unesco whose support to the IGY has been vital.)*

OURSELVES AND THE UNIVERSE

MAN is a part of the universe. This is true despite the fact that man is infinitesimally small and short-lived, compared with the whole cosmos. There has not been a single second in the history of the human race when mankind has been unaffected by phenomena which have their sources beyond our planet.

Light and warmth from the sun are constantly pouring down upon the earth. It is this solar power which makes the earth a habitable place. If the sun ceases to emit light and heat it would mean the end of life on earth.

At the edge of the earth's atmosphere, each square centimetre at right angles to the radiation of the sun receives two calories of solar energy per minute. For the whole sunlit face of the earth (half the sphere, since at any given moment half the globe is in darkness) this makes 2,540,000 millions of millions of calories per minute (2.54×10^{18} cal./min), or almost 4,250 millions of millions of kilowatt hours per day (4.25×10^{15} kWh/day). Thus the earth

each year receives solar energy equivalent to 50,000 times the annual energy production of the whole world.

Of course, a large amount of this energy is absorbed by air molecules before it reaches the ground, and, furthermore, the amount of energy which is actually received at any spot on the surface of the earth depends very much on geographical location. At a place where the solar rays strike the ground vertically, or nearly so, they are much more powerful than at a place near the poles of our globe, where they hit the ground obliquely, and where, therefore, the same amount of energy is being distributed over a much larger area.

Moreover, the equatorial regions absorb more warmth during the day than they are capable of re-emitting at night-time. Thus the surplus heat streams northwards and southwards into areas where there is no such surplus. This is accomplished through the ascent of the warm equatorial air masses and their movement towards the middle latitudes. Since the air leaving the equatorial regions has to be replaced, cool air masses from the intermediate latitudes flow towards the equator at low heights.

Another factor which has a great influence on the distribution of solar power over the surface of the earth is the arrangement of land and sea. Whereas the solid surface of the earth quickly absorbs the sun's heat in daytime and quickly gives it off again during the night, it takes longer for the sea to warm up ; but re-radiation by the sea of the absorbed energy occurs much more slowly. This difference in rate between the absorption and re-emission of energy causes winds to blow round the world, following certain patterns of movement.

Another factor is precipitation. The winds from the open sea, carrying with them large amounts of water-vapour, bring moisture to the dry lands. All this is known as the general circulation of the atmosphere. Still other movements of the air are caused by the rotation of the earth around its axis. The general circulation of the atmosphere is therefore a very complicated affair, and many questions about it remain to be solved, for example : How do the huge masses of snow which cover the vast lands of the Antarctic influence the circulation of the atmosphere ?

What is the effect of drifting icebergs on the climate ?

What is the physical mechanism causing high-pressure areas which build up in the polar regions to move to the middle latitudes of our planet and shape the weather conditions there ?

Solar Effects on the Earth

But this is by no means the complete story. There are sudden emissions of ultra-violet light by the sun. Where such a solar flare occurs, electrically

charged particles are emitted at a great rate. Some of them travel long distances through space and impinge, hours later, on the earth's atmosphere, causing electrical and magnetic disturbances.

The spectacular aurorae which can be seen quite often in the polar regions of the earth, and less often in middle latitudes, are a splendid example of one of the effects of this radiation.

Only in recent years have scientists discovered that not only is the lowest layer of the atmosphere (the troposphere) very turbulent, but also that strong winds, and even upward and downward movements of huge masses of air, prevail at much higher altitudes. There is, for instance, one mighty current of wind which is called the jet stream. It is many miles wide and extends over almost the whole globe. It moves at altitudes of between 10 and 15 kilometres; the wind speeds observed range up to 800 kilometres per hour. Solar physicists have lately found that sudden energy outbursts of the sun in the ultra-violet spectrum make it possible to forecast sideward movements of the jet stream, and they are also able to predict certain weather phenomena associated with these shifts.

The earth can be pictured as a huge magnet with a magnetic south pole and a magnetic north pole. The magnetic poles of the earth do not coincide with the geographic poles. However, in the realm of geophysics both are equally distinct.

The magnetic south pole lies in the northern hemisphere at longitude 100^0 West, latitude $+ 74^0$, while the position of the magnetic north pole in the southern hemisphere is longitude $150^045'$ West and latitude $-71^010'$ The intensity of the magnetic field of the earth varies slightly. There are times when the magnetic force is steady for hours or even days, while at other times strong fluctuations are observed.

These geomagnetic fluctuations have their source in the activity of the sun. Electrically positive particles, the protons, and perhaps also electrons—tiny negatively-charged elementary particles of the atom—travel from the sun's centres of activity through space, and some of them reach the earth's atmosphere after a journey of 150 million kilometres, which takes them 27 hours to complete. Ultra-violet solar flares, however, are transmitted through space with the speed of light. Thus they are visible on earth only eight minutes after they occurred on the solar surface. Although their detection is very difficult, owing to absorption in the atmosphere, this nevertheless gives scientists a chance of predicting the intensity of variations in the geomagnetic field many hours before they actually take place, since ultra-violet flashes of the sun and the ejection of atomic particles are closely related with each other and, in many cases, occur simultaneously. However, we do not know the

precise mechanism of the proton and electron emissions from the sun, nor do we completely understand the process in the upper atmosphere which ionizes the air molecules and, by building up strong electric currents, intensifies magnetic fluctuations.

Alterations of the electrical conditions in the ionized layers of the upper atmosphere cause yet another effect. Radio waves, which are usually reflected back to the ground by these layers, are able to pass through them at such times, and thus lose themselves in outer space. Radio receivers, which are dependent on the reflection of the waves at the ionospheric layers, consequently fail to pick up any signals. Sometimes the short wave band, so important for trans-atlantic radio links, is affected by this phenomenon for hours, although reception in the long-wave bands may meanwhile be exceptionally good. The whole process is very complicated. Whereas one of the five or six ionized layers known to us will open the way for radio waves of a certain wavelength, another layer at a different height will reflect waves of a different wavelength. We still have to guess as to the explanation of the electro-chemical interchanges which cause these particular conditions.

Cosmic Radiation and Meteors

There are still millions of other particles impinging on the atmosphere of the earth. All of them exercise known or unknown influences. Cosmic rays are fast-moving atoms of hydrogen, helium, and some heavier elements, which are stripped of all their electrons once they enter the atmosphere. They move at tremendous speeds, sometimes approaching that of light. Though the atoms and molecules of the atmosphere prevent the primary particles of cosmic radiation from reaching the ground, the energy of these primary particles is transferred to the atoms of the air. This transmission results in a splitting of the air molecules into elementary particles which, after many interchanges of their kinetic energy with still other protons, electrons, and neutrons, reach the earth. Their energy is still very great. They hit the human body like fast-flying miniature bullets and go through it almost unaffected. Some of them possess such energy that they are capable of penetrating many kilometres of solid earth, and have been registered in the deepest coal mines. The origin of these cosmic rays is still a riddle.

Another phenomenon is meteors or 'shooting stars', as they are occasionally called. This cosmic debris consists of stony or metallic bodies, varying in size from a grain of dust to rocks as big as a house. Though the latter are very rare indeed—there is no record in human history of a person having been killed by one of them—the tiny meteors are very common. From counts made

during observations, astronomers have estimated that as many as 750 million million meteors enter our atmosphere every day. The larger ones reach the ground, but most of them are so small that they either burn up completely during their fall because of the great heat caused by air friction, or, if they are so small as to be invisible to the human eye, drift slowly to the ground.

Although solar radiation, cosmic rays and meteoric dust are cosmic in nature, they have to be considered if one wants to talk about the earth as a whole, since they unquestionably have a great effect on the physical conditions of our home planet. The study of solar activity, wind currents in the upper atmosphere, variations in the geomagnetic field and other changes taking place in the course of decades or even centuries (such as the shifting of the geographical and magnetic poles or the movements of the continents) are essential to an understanding of the physical principles which govern the earth, and, consequently, its inhabitants.

It is the purpose of geophysics to give man a complete understanding of his environment. And even if one confines the expression 'environment' geographically to the spots where human beings live or which they visit, one must still acquire knowledge about the uninhabited deserts or the deserted polar regions, since what is happening there will eventually affect other parts of the globe also. One example of such correlation has already been mentioned: the jet stream, whose influence on the meteorological conditions in the troposphere we are only now beginning to understand. Another example would be the meteorological happenings in Antarctica, which quite frequently modify the weather in intermediate latitudes.

Scientists have ventured into the cold Arctic and Antarctic regions; they have climbed the highest mountains, toiled through waterless deserts, over the plateau of Tibet, and through the damp forests of Africa, always risking their lives, and sometimes losing them, in order to measure the shape of the continents and draw maps of temperature distribution, wind currents, and cosmic ray intensity.

A mass of data has been collected by these expeditions; but, throughout history, the scientist has felt (and this feeling is probably stronger today than ever before) that the data accumulated are not a sufficient basis for final conclusions. New data answer certain queries, but at the same time they expose new problems demanding a new collection of data for their solution. Such is the never-ending cycle of science. We shall probably never achieve the complete picture we are dreaming of, but through extensive research we are approaching it steadily.

The Complexity of Geophysics

Throughout its history, science has developed many different branches. They became a necessity as more and more facts accumulated, and no scientist was any longer capable of knowing all the facts. Thus today we speak of astronomy, physics, and chemistry as the natural sciences. But still another subdivision turned out to be necessary. We have to distinguish between the physicist who deals with nuclear energy (and would, therefore, call himself an atomic or nuclear physicist rather than simply a physicist) and the physicist who traces the boundaries between physics and chemistry, the chemical physicist. Then there are some branches which grew out of the combined knowledge and ability of scientists of several different disciplines. Geophysics is one of them. Today a geophysicist ought to be an astronomer, a physicist, a meteorologist and he should, if possible, know something about nuclear physics and some other branches of science at the same time—since all these lie at the roots of modern geophysics.

As no one man could possess sufficient knowledge to be an expert in all these disciplines, geophysicists have specialized, like all other scientists. Some are mainly concerned with the upper atmosphere, others with the shape of the globe, geomagnetism, etc. They have done and are doing extensive research in their particular fields. From time to time they compare results and arrive at certain conclusions. Starting again from these newly-established facts, they collect more empirical data, from which, in turn, other theoretical aspects evolve.

But sometimes they interrupt this activity to join forces for a world-wide enterprise, in which combined efforts over a large part of the globe, or even the whole of it, offer the solution to a series of problems which could not be tackled otherwise.

As far as geophysics is concerned, this has happened twice before and is happening a third time now. The first world-wide enterprise in geophysics took place from 1882 to 1883 and was called the First International Polar Year. It was followed by the Second Polar Year in 1932 to 1933, and is now succeeded on a wider plane still by the International Geophysical Year.

A LITTLE ODE

(In Honour of the International Geophysical Year)

(a)

You who mend simple fuses by magic,
To whom Isotope and Ionosphere
Are characters in a new mythology,
And you lovers, embracing
In the atomic dark, O
Raise a cheer
For the padded heroes of Antarctica,
And the eerie Grasshopper
That, at the Pole of Inaccessibility,
Transmits to an attuned ear
The snowy secrets
Of the International Geophysical Year.

(b)

Now Megacycle and Minitrack
Echo in a poet's verse
As eloquently as the place names
Of Attica. And philosophers,
Too skeptical
Of what Meaning means to be sure
Of anything, agree
To a Free Fall; and children,
Travelling without fear
Beyond earth's Gravitational Pull,
Share in sleep
The argosies of the world to be.

A LITTLE ODE

(c)

What shall we ignoramuses implore
This year of scientific grace?
Predictable weather for the wedding?
Or escape to a star?
O Indefinable Powers,
Grant, as rival nations release
Their Moons of Good Will
Into our last breathing space,
We may hear
The heartbeats of the vulnerable
And authentic Dove
Descending with the Gift of Peace.

F. Pratt Green

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